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FOREST PEST MANAGEMENT
Pacific Southwest Region

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BIOLOGICAL EVALUATION OF THE UPPER BOULDER SALE, GREENVILLE RANGER DISTRICT, PLUMAS NATIONAL FOREST

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ABSTRACT

The Upper Boulder Timber Sale was examined to determine if insect populations were approaching an epidemic condition as specified under contract clause C2.134. The level of Jeffrey pine and white fir mortality which has occurred since the sale was sold was unacceptable to the sale administrator. The factors involved in the Jeffrey pine mortality were the Jeffrey pine beetle, western dwarf mistletoe and competition from white fir. The white fir mortality was due to annosus root disease and the fir engraver beetle. The bark beetle populations are not currently at nor approaching epidemic levels, and the amount of mortality for both tree species is expected to be about the same next year. If the present stand prescription is followed, white fir will become the predominant species and mortality will continue. The site will be underutilized for timber production and pest problems will continue through the next rotation.

OBSERVATIONS

On August 3, 1981, Dave Schultz, Gregg DeNitto and James Allison of the FPM Staff examined portions of the Upper Boulder Sale with Conrad Nussbaumer, John Houck and Dick Castaldini of the Plumas National Forest. The Upper Boulder Sale is a green timber sale located at T28N, R12&13E at elevations of about 6,000-6,500 ft. and consists of scattered parcels over about 7,500 acres. Near the creeks the timber is mixed conifer consisting of Jeffrey pine, white fir, incense-cedar and sugar pine. The ridges are currently about 60 percent white fir and 40 percent Jeffrey pine. Lodgepole pine is a major component on some of the flats.

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Faded Jeffrey pine are present throughout the sale as scattered individuals. These trees had been attacked by the Jeffrey pine beetle, Dendroctonus jeffreyi, during 1980 and were generally abandoned by bark beetles by the time of the examination. A search of the area showed that scattered individual Jeffrey pine were currently under attack. The number of newly attacked trees was approximately the same or less than the number of abandoned trees. The major attack period of the Jeffrey pine beetle is over for this year although some attacks could occur into October. Jeffrey pine mortality appears to be stable at the current level. Losses are likely to continue at this level as long as the conditions which contribute to the mortality remain unchanged.

Many of the Jeffrey pine appear to be relatively old and declining in vigor. Some of the pines are heavily infected by dwarf mistletoe, a primary causal agent of some of the mortality. White fir reproduction is quite dense around some of the pines and appears to be contributing to the pine mortality by competing for water.

A high proportion of the number of trees that have recently died in the sale area are sapling and pole size white fir. Based on the older live trees and stumps in the area, it appears that the original composition of most of the sale area was predominantly Jeffrey pine with a minor component of white fir. And, considering the mean annual precipitation for this location and the presence of bitterbrush and rabbitbrush, Jeffrey pine certainly seems best suited to most of the sites. However, because of fire exclusion and past cutting practices, the proportion of white fir has been increasing in the stands, and it is now the predominant species in some places.

Many of the currently faded fir trees occur around old fir stumps which are infected with annosus root rot, caused by Fomes annosus. These trees were attacked by the fir engraver, Scolytus ventralis, during June, July, or August of 1980 and most of the resulting brood has already emerged. Current attacks by the fir engraver are difficult to detect, but some of the "green" fir trees in the area have symptoms that indicate that some attacks have taken place this year. Those symptoms include off-color tops, flagging branches and pitch streamers.

Although the white fir mortality level can appear unacceptably high and is likely to remain at this level for the foreseeable future, it is the result of conditions which have developed over a period of time and should not be considered an outbreak or epidemic.

The Upper Boulder Sale will remove most or all of the pine overstory, leaving white fir as the predominating advance reproduction. It is unlikely that there will be a completely stocked stand at the end of the next rotation, due to continuing mortality.

Future mortality will occur for many of the same reasons that mortallity is occurring at present. Densely stocked white fir growing on what is essentially a pine site can deplete the available soil moisture before transpiration shuts down, thereby increasing the probability of successful attacks by the fir engraver. Young fir trees growing around stumps infected with Fomes annosus are likely to be killed by the root disease and/or the fir

engraver before they reach commercial size. In addition, any of the firs which are wounded during logging are almost certain to become infected by decay fungi (possibly Fomes annosus) and will have little merchantable volume by the end of the rotation. The best opportunities for achieving the growth which the area is capable of producing would seem to be a regeneration cut followed by planting Jeffrey pine.

Because the Upper Boulder Timber Sale contract has already been awarded, it is probably not feasible to modify the conditions of the sale at this time. If additional work could be done in the area after the sale has closed, future pest-caused losses could be avoided and the area would be more productive. It seems to us that regenerating the area with pine would produce the greatest benefits. If this is impossible, the existing regeneration could be "sanitized" by generally thinning the white fir reproduction, felling all damaged fir and any pine reproduction which has severe dwarf mistletoe, and eliminating the white fir around stumps infected with Fomes annosus. Trying to work with the existing regeneration will be difficult and may not produce satisfactory results.

If guidelines to control or prevent pest-caused losses are needed for similar sales in the area, the Forest Pest Management Staff should be asked for assistance.